

EXHIBIT S

**ANSI
B11.3-1973**

**American National Standard
Safety Requirements
for the Construction, Care, and Use
of Power Press Brakes**

Secretariat

**National Safety Council
National Machine Tool Builders' Association**

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American National Standards Institute, Inc

3.22.3.2 Push or Slide Feeding (Hand-Operated).

A pusher or slide can be used to feed a blank under the punch, and is withdrawn after the operation is performed. The pusher or slide may have a machined nest to fit the shape of the part. If the part does not drop through the die or is not ejected by other means, it can be withdrawn by the pusher or slide.

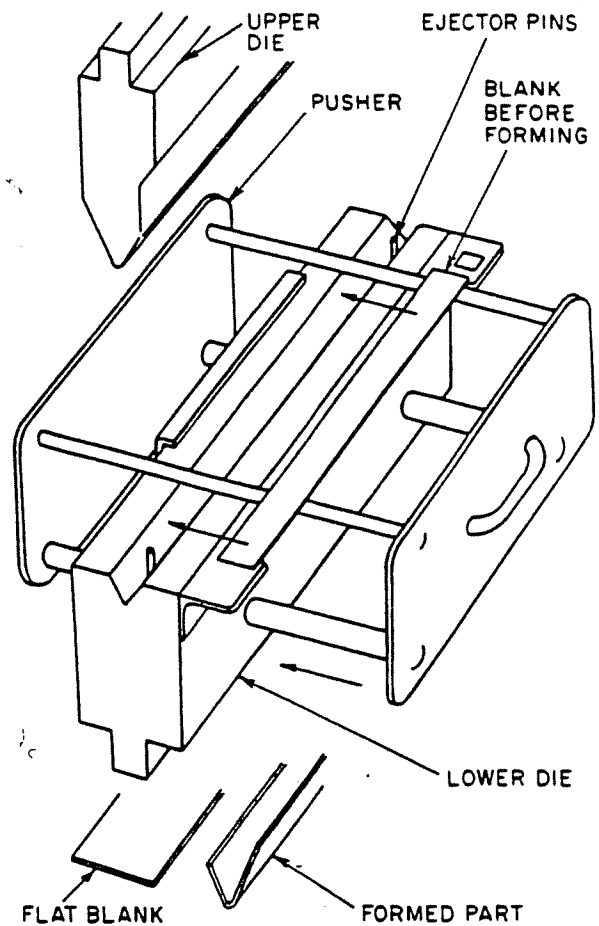
E 3.22.3.2 Push or Slide Feeding (Hand-Operated)

Illustration 9
Example of Push or Slide Feeding

3.23 Foot Control. A foot control is the foot-operated control mechanism (other than foot pedal) designed to control the movement of the ram on mechanical, hydraulic, or special-purpose power press brakes.

3.24 Foot Pedal. A foot pedal is the foot-operated lever designed to operate the mechanical linkage that directly engages the clutch and disengages the brake on a mechanical power press brake while the pedal is held depressed.

3.25 Foot-Treadle Bar. A foot-treadle bar is a bar that is moved in a vertical direction when depressed by the foot of the operator at any point along its length. This bar is attached to two lever arms pivoted from the outside surface of the frame and is connected through linkage to the clutch and brake.

E 3.23 Foot Control. This control usually takes the form of an electrical switch that operates a solenoid or solenoid valve.

4.2.4.2 Air-Type Clutch/Brake

4.2.4.2.1 *Inch.* Machines with air-type clutch/brake shall be designed so as to allow the die setter to have complete control over the ram movement for setting dies, through the actuation of a remote foot control.

The remote foot control shall be protected against accidental actuation and so located that the operator cannot reach into the point of operation while actuating the foot control. If the single control is not remote, the requirement given in 4.4.4.1.2 (1) applies.

4.2.4.2.2 *Stopping Movement.* The stopping movement of the ram motion shall be an integral part of the operation of the foot control on machines with air-type clutch/brake.

4.2.4.2.3 *Foot Control.* A foot control shall have a pad of sufficient dimension to allow even distribution of the actuating pressure as applied by the operator's foot. The pad shall have a nonslip contact area and shall be firmly attached to the control.

4.2.4.2.4 *Foot-Control Actuation Prevention.* The foot control shall be protected so as to inhibit accidental actuation by falling or moving objects, or by someone stepping on it. Means shall be provided for manually locking the foot control to inhibit such accidental actuation.

E 4.2.4.2.1 Inch. Inch is only intended for use in die setting, not as a production mode for use by the operator.

E 4.2.4.2.2 Stopping Movement. On this type of machine, the brake is normally engaged and the clutch is normally disengaged.

E 4.2.4.2.3 Foot Control. The use of conventional foot valves or foot switches that are both portable and storable meets the intent of this requirement.

E 4.2.4.2.4 Foot-Control Actuation Prevention. One way of preventing or inhibiting accidental actuation of the foot control would be to provide a key-operated selector switch. Another way of providing against accidental actuation is shown in Illustration 15.

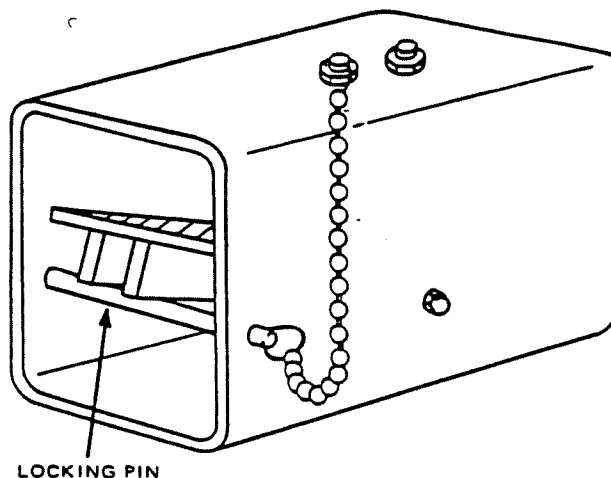


Illustration 15
Mechanical Locking Pin in Place in Foot-Control
Stirrup Guard

4.2.4.2.5 *Brakes.* Friction brakes provided to stop or hold the ram movement shall be set with compression springs. Brake capacity shall be sufficient to stop the motion of the ram quickly, and shall be capable of holding the ram and its attachments at any point in the ram's travel and of being self-engaging when the air engaging force has been exhausted.

automatic machine-initiated and controlled stroking. The selection of manual or automatic return stroking shall be by a means capable of being supervised by the employer. The manual opening-stroke controls shall be designed to override the closing-stroke section regardless of selected mode.

(3) The stroking control shall be designed to incorporate a means for stopping the ram at the top of the stroke even if the operator(s) fails to release the operating means.

4.3.4.2 Stop Control. The stopping of ram movement by actuation of a stop button or by release of the ram-operating control means during the holding distance or automatically at the completion of a ram cycle must be assured by the highest order of reliability. The stop control shall incorporate design features that minimize the possibility of the press-brake ram being unresponsive to a stop signal.

4.3.4.2.1 Emergency Stop Control. An emergency stop control(s) identified by a large exposed red button readily available to the operator shall be provided to immediately stop the ram movement by momentary actuation of this control. The emergency stop control shall override every other press-brake control. Reactuation of the ram movement shall require the use of the operating means which has been selected.

4.3.4.3 Foot Control. A foot control, if used, shall be protected so as to inhibit accidental actuation by falling or moving objects, or by someone stepping on it.

A foot control may include both the up and down functions in one mechanism or may separate them in two mechanisms wherein one controls up and one controls down, and release of either stops the ram motion.

4.3.4.4 Ram-Reversing Control System. The ram-reversing control system shall incorporate a means to interrupt and override the closing movement of the ram. This means shall be incorporated in the operator control stations.

4.3.5 Electrical

4.3.5.1 Disconnect Switch. A main disconnect switch or power-circuit interrupter capable of isolating the press brake and control system from the main power supply shall be provided with each power press-brake control system. The disconnect switch shall be capable of being locked only in the "off" position.

4.3.5.2 Main Drive-Motor Start-Button Actuation Prevention. The hydraulic-pump-motor start button shall be protected against accidental actuation.

E 4.3.4.2 Stop Control. The system controlling the stopping of the ram extends from the motion pick-up on the drive or ram to the cylinder ports of the ram-stroking control valves. Stop signals can come from: 1) emergency stop control, 2) operating means, and 3) top stop control.

E 4.3.4.2.1 Emergency Stop Control. An emergency stop control should be available to the operator. It is recommended that every operator station include one. Its use is most commonly not associated with an emergency situation.

E 4.3.4.4 Ram-Reversing Control System. One example of the ram-reversing control system is the up button incorporated within the operator control station on a hydraulic press brake, along with two-hand operator-control run buttons which are used to control the downward movement of the hydraulic press-brake ram. This up button would interrupt and override the downward operating means in any operator control station.

E 4.3.5.1 Disconnect Switch. It is the owner's responsibility to ensure that a disconnect switch is installed on each power press-brake operation. Locking the disconnect switch means the use of padlocks, seals, or something as effective. A directly controlled linkage system is also considered as a press-brake control system.

E 4.3.5.2 Main Drive-Motor Start-Button Actuation Prevention. One means is to install a depressed motor-start button.